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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/650,363

08/27/2003

Harshvardhan Sharangpani

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05/26/2006

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EXAMINER

TIMBLIN, ROBERT M

ART UNIT

PAPER NUMBER

2167

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/650,363	SHARANGPANI ET AL.	
	Examiner	Art Unit	
	Robert M. Timblin	2167	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/22/2004</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This office action corresponds to application 10/650,363 filed on 8/27/2003.

Claims 1-72 have been examined and are pending prosecution.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 302z of figure 3A.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claim 1 is object to for the minor informality of not specifying how many search execution engines are present. Examiner interprets there being one execution engine present.

Claims 14 and 15 are objected to because of the following informalities: there is lack of antecedent basis for phrasing "the value." That is, "the value" is not explicitly defined prior to this phrase.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-70 are rejected under 35 U.S.C. 102(b) as being anticipated by **Messenger et al.** ('Messenger') (US Patent 5,051,947).

With respect to claims, 1,2, and 67, **Messenger** teaches A rule processor for conducting contextual searches, the processor comprising:

**'a plurality of input payload search registers'** as a character registers (abstract and figure 1).

**'search execution engine coupled to the plurality of search registers** (abstract and figure 4) **to perform one or more contextual searches on content in the search registers via parallel pattern matching** (col. 5 lines 37-56) **in response to executing one or more search instructions specifying the one or more pattern searches and presenting one or more patterns to the content in the search registers'** (col. 19 line 18-col. 20 line 18 and col. 22 lines 47-67).

With respect to claims 3, 4, 6, 12, 15, 22, 30, and 63, **Messenger** teaches **'at least one of the one or more search instructions specifies a pattern that is to be searched against the content in the plurality of search registers and zero or more search parameters'** (col. 19, line 18-col. 20 line 18)

With respect to claims 5, 24, 34, 38, 45, 49, 50, 51, 61, and 64-65, **Messenger** teaches **'the portion of the pattern to be masked is specified by a mask vector to mask off specific bytes in the pattern'** (col. 10 lines 10-40, and figures 3a-4).

With respect to claims 7 and 8, **Messenger** teaches **'at least one of the instructions specifies a windowed-find-first-forward search'** (col. 24 line 15-col. 25 line 62).

With respect to claims 9-11 and 25, **Messenger** teaches **'the search execution engine generates at least one result output indicative of success in searching the**

**content in the search registers'** (col. 9 lines 1-30 and *result collection* starting on col. 27).

With respect to claims 12-14, 23, and 53, **Messenger** teaches '**at least one search instruction includes a field that specifies a parameter to use to control the search or a pointer into a memory that stores the parameter to control the search'** (col. 12 line 65-col. 13 line 35 and col. 10 starting at line 10).

With respect to claims 16-18 and 32, **Messenger** teaches '**a register file'** as a character register (abstract and figure 2.)

With respect to claims 19 and 66, **Messenger** teaches '**a memory to store one or more search instructions to be applied to data in the search registers'** as special-purpose processors store search conditions (col. 1 lines 61-67).

With respect to claim 20, **Messenger** teaches '**to perform searches for arbitrarily long patterns in the content in the search registers'** (abstract and col. 5 lines 26-36).

With respect to claims 21 and 70, **Messenger** teaches '**instruction sequencer for applying one or more search instructions to the search execution engine'** (col. 8 lines 64-67).

With respect to claims 26, 27, 33, 36, 40, 41, 46, 49, and 68, **Messenger** teaches "**a search array coupled to the plurality of input payload search registers, wherein**

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**content in the plurality of search registers is replicated and stored in the search array'** (col. 27 lines 7-53 and figures 3a-f and 15)

**'a sorter coupled to the search array to perform the one or more operations in response to information specified by one or more search instructions'** (col. 4 line 62-col. 5 line 4 and element 4 of figure 1).

With respect to claim 28, 29, 35, 39, 48, 54, and 62 **Messenger** teaches **'the sorter is coupled to receive the M match lines to perform the one or more operations associated with matches indicated by the M match lines'** (col. 4 line 62-col. 5 line 4, col. 18 *general purpose lines* description and element 4 of figure 1).

With respect to claim 31, Messenger teaches **'the information specifies a location in a memory at which the range is stored'** (col. 26, lines 67-64).

With respect to claims 37, and 44, Messenger **'the second output is indicative of a number of matches in a range of the M match lines'** (col. 8 lines 28-39).

With respect to claims 42, 43, and 58, **Messenger** teaches **'a counter to determine a number of matches in the search array'** as *accumulator logic* (col. 16).

With respect to claims 47 and 48, **Messenger** teaches A rule engine content processor comprising:

**'a search array to perform pattern matching between data stored in the search array and an N byte pattern from the search instruction received on a first input, the search array having M match lines as outputs with each of the M match**

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**lines associated with a group of data stored in the array and being indicative of whether the N byte pattern matches data stored in its associated group of data stored in the search array'** (col. 27 lines 7-53 and figures 3a-f and 15)

**'a sorter coupled to receive the M match lines to perform one or more operations associated with matches indicated by the M match lines, the one or more operations being performed in response to information specified by the rule, and further wherein the sorter outputs data indicative of any match found'** (col. 4 line 62-col. 5 line 4, col. 18 *general purpose lines* description and element 4 of figure 1).

With respect to claims 52 and 53, Messenger teaches **the rule includes the pair of offsets'** (col. 28, lines 55-59).

With respect to claims 55-57 and 59, **Messenger teaches 55. The rule engine content processor defined in claim 47 wherein the sorter further comprises: a priority encoder to identify a location in the search array corresponding to the M match lines corresponding to a first occurrence of a match between the pattern and data stored in the search array in relation to one side of the search array'** (col. 18 line 35-col. 19 line 16).

With respect to claim 60, **Messenger teaches 'the selector has a second output indicating if a match occurred between the pattern and data in the search array'** (col. 4 lines 62-67).



With respect to claim 69, **Messenger** teaches **'loading the search registers is performed to store, replicate, and interleave data such that data for one row is stored in an adjacent row in shifted form'** col. 7 line64-67 and figure 3a).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 71-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Messenger** as applied to claims 1-70 above and further in view of **Herman et al.** ('Herman' hereinafter) (US Patent 5,050,075).

With respect to claim 71, **Messenger** teaches A process for performing contextual searches in a pipelined fashion, the process comprising:

**'fetching a rule from a rule memory'** (col. 1 lines 62-67).

**'executing one or more search operations on values in a plurality of input payload search registers storing content'** (abstract).

**'performing sort operations on results of executing the one or more search operations'** as generating results in a nested arrangement (col. 4 lines 14-25).

Messenger fails to teach '**decoding the rule and assembling indirect fields**'

**Herman**, however, teaches **decoding the rule and assembling indirect fields** as instruction decode stage (col. 10, lines 22-27) to decode instructions.

It would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because Herman's teaching would have provided Messenger's system with decoding instructions.

With respect to claim 72, **Messenger** teaches '**four stage pipeline with a search array and a sorter**' (col. 5 lines 45-56).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

#### **US Patents**

4,550,436  
6,269,189  
5,051,947  
5,050,075  
5,051,947  
5,497,488  
5,822,608  
5,060,143

#### **Publications**

2003/0125931  
2002/0194223

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**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M. Timblin whose telephone number is 571-272-5627. The examiner can normally be reached on M-F 8:00-4:30.

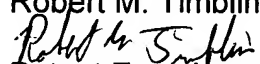
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Leslie Wong

Primary Examiner

RMT  
5/19/2006

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Patent Examiner AU 2167